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ABSTRACT

An examination was made of Federal program statistics on vocational education during the past 10 years by the Bureau of Occupational and Adult Education of the U. S. Office of Education and the National Center for Education Statistics of the U. S. Department of Education. The study found that despite a mandate for reform, the National Center's data from the Vocational Education Data System (VEDS) exhibited many of the same basic defects as the previous system. The two systems appear to have been designed to create exaggerated impressions about the scope and effectiveness of the program, as well as to sustain certain official "myths" embedded in the authorizing legislation. They have done this by manufacturing inflated program statistics, marketing inflated programs claims, and protecting inflated numbers from embarrassment. Four recommendations for reform were made: (1) do not confuse official numbers with information, (2) combat the tunnel vision of categorical programs, (3) end the conspiracy of polite silence about bad numbers, and (4) urge more restraint on legislators who demand accountability that is not feasible. (Author/KC)

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TEN YEARS OF FEDERAL STATISTICS ON VOCATIONAL EDUCATION

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Abstract: This paper examines Federal program statistics on vocational education produced by the Bureau of Occupational and Adult Education of the U.S. Office of Education and the National Center for Education Statistics of the U.S. Department of Education. It observes that despite a mandate for reform, the National Center's data from the Vocational Education Data System (VEDS) exhibited many of the same basic defects as the previous system. The paper goes on to identify some specific respects in which these two systems appear to have been designed to create exaggerated impressions about the scope and effectiveness of the program, as well as to sustain certain official "myths" embedded in the authorizing legislation. The paper concludes with four recommendations for reform.

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Introduction

My subject is Federal program statistics on vocational education. Starting from a condition of blissful ignorance, I have gone through four stages in my attitude toward this subject: shock, cynicism, detachment, and hope. My purpose today is to lead you through these same four stages. This means I will be presenting four different approaches to my subject. To avoid confusion, I am going to commence by delineating and giving a name to each approach:

1. Exposé. Here I will be attempting to persuade you that the affronts to reason contained in Federal statistics on vocational education are worse than you ever imagined. My purpose is to get your attention by shocking you.

2. Handbook. The approach here is a rather cynical one--namely to set forth some practical guides to cheating with program statistics, based on observations of how the game has been played in vocational education over the last ten years. The merit of this approach is that it helps to make clear there has been a method to the statistical madness in vocational education, and a recognition of these methods may save you from being taken in by similar types of program statistics.

3. Ethnography. Here we adopt a detached attitude, seeking to understand the ethos of those who worship strange numbers. With the handbook approach, we were focusing exclusively on methods. Now, as ethnographers, we seek to see the world as the practioners see it--to identify the content of the myths which motivate their strange practices.

4. Sermon. Once we understand the methods and motives of the practices we have criticized, it is tempting to propose reforms, and to exhort those involved to change their ways. Still another reason for sermonizing is that the sins of the current data system have at last been officially acknowledged. I refer here to VEDS--the Vocational Education Data System--which was suspended by the Office of Management and Budget last November on the grounds that it had failed to produce interpretable data.

Before embarking on the program I have just outlined, it will be useful to identify the players and provide a little history.

Beginning with the 1972-1973 school year, the Bureau of Occupational and Adult Education (hereafter known as BOAE) issued annual statistical reports on federally-assisted vocational education. By late 1975, criticism of the BOAE data had persuaded relevant members of Congress that a new effort should be undertaken, and the result--contained in the Vocational Education Act of 1976--was a mandate for the National Center for Education Statistics (NCES) to design and implement a new Vocational Education Data System (VEDS). During the two years that VEDS was being designed, the BOAE numbers--essentially compilations of State reports--continued to be issued. Thus, the BOAE system accounts for six of the ten years we will be considering. Even though they were under the shadow of the VEDS reform from 1976 onward, the BOAE figures continued to appear in NCES publications, budget justifications, and Congressional testimony until the middle of 1980.

The VEDS data made their inaugural appearance in September of 1980 in testimony before the House Committee on Education and Labor. Thereafter, they were routinely cited as the definitive source on vocational education at the Federal level. From the first, critics of the BOAE statistics were struck by similarities in the VEDS numbers, but complaints about the new data did not begin to have serious effects until the middle of 1983. Then, in rapid order, NCES officially discovered serious year-to-year inconsistencies in the VEDS data, the issue was brought before the advisory council charged with oversight of data quality at NCES, and the Office of Management and Budget moved to suspend further collection of the data.

VEDS collected data for five years, but it now appears that data for the most recent year--1982-1983--will never be issued.

Summing up, after ten years of effort and expense (estimated at about $250 million) we are no closer to interpretable program statistics on the dimensions of publicly supported vocational education. Doctors of statistics are now pondering the cause of VEDS' demise and exploring the feasibility of new approaches, while committees of Congress are contemplating new mandates for official statistics on vocational education. The future is uncertain.

Exposé: Amazements in the Two Official Systems

1. Double-Counting in the BOAE Reports. On average, every student enrolled in a Voc Ed program got counted twice. For example, BOAE claimed there were nearly 4 million public secondary students in occupational programs in 1973, but an NCES survey taken the same year indicated just 1.7 million such students.

2. Double-Counting in VEDS. Despite its mandate for reform, VEDS merely extended the inflated trends established by the BOAE numbers. For 1979 VEDS reported 12.5 million public secondary students enrolled in some type of Voc Ed program. The State of Florida made an especially notable contribution to this figure by claiming 175 percent of its entire high school population. The same year, Iowa did even better by reporting postsecondary enrollments in Voc Ed amounting to 217 percent of its college population.

3. Millions of Program Enrollment Figures, But Not One Measure of Duration. Both BOAE and VEDS required elaborate enrollment reports in which up to 15 varieties of students were distinguished by up to 116 varieties of programs, but neither system ever sought the first item of information on the duration of programs or the length of student participation. As a result of this incredible blindness, students who completed an eight-week (one course) program were indistinguishable in the official statistics from students who had pursued a three-year sequence.

4. Spurious Job Placement Rates. The center-piece of Voc Ed program statistics has always been the official estimate of the proportions of students whose success in finding and holding a job might reasonably be attributed to their vocational training. For 1976-1977, the two key statistics relating to federally-assisted Voc Ed at

4. Spurious Job Placement Rates (Continued)

the secondary level were, first, that 1.4 million students had completed occupational programs in the previous year, and second, that the job placement rate for this group was an impressive 88 percent. Given a naive interpretation of these two statistics, we might believe that 1.2 million completers were successfully placed in jobs for which they had been trained, but when the detailed figures reported to BOAE are examined, we find the actual number of such placements was about 350,000, for an overall placement rate of less than 30 percent.

Handbook: How to Cheat with Program Statistics

Drawing on the last ten years of official statistics on vocational education, a considerable catalog of clever but questionable practices could be compiled. For the sake of balance and brevity, I am going to focus on just three basic problems: how to manufacture inflated program claims, how to market those claims to advantage, and how to protect them from potential embarrassments.

1. Manufacturing Inflating Program Statistics. Here are four specific methods represented by the two systems:

- o Treat a day of participation the same as a full year. Instead of asking for program enrollments for a point in time, both systems asked for cumulative enrollments over a twelve-month period, and neither system prescribed any minimum duration of participation.

- o Treat ten cents worth of assistance the same as $5,000 worth. Both systems claimed to describe only federally-assisted enrollments in vocational education, and despite the fact that Federal funds amount to only about 10 percent of all public spending for vocational education, the enrollment reports have regularly exceeded the universe.

- o Demand more detailed enrollment figures from schools than they have students. This method is by no means obvious, but it appears to work, because it forces school officials to make up numbers (in the absence of sufficiently detailed records), and most officials when called upon to divide 20 students among 200 reporting categories will give you numbers which add up to 50 or 60. For example, in 1976 the Office for Civil Rights asked all the public high schools in Virginia to tell it how many Indians were enrolled in vocational education programs, and the total for the State was 213--the sum of 510 numbers, or one for each school. Five years later, VEDS asked these same schools to report how many male and female Indians were

enrolled in each of 116 varieties of occupational programs, and when the resulting 118,000 numbers were added up (232 numbers from each of 510 schools), it appeared there were more than 20,000 Indians. This was an potential embarrassment for VEDS, since the 1980 Census showed only 9,300 Indians of all ages in the State, but in defense of the Virginia school officials, it must be said that at least five times out of six, they were trying to tell VEDS that they did not have any Indians.

- o Don't bother with nice distinctions when counting program successes. In counting successful placements of program completers at the secondary level, BOAE ignored the following distinctions: whether the student completed high school, whether the student found to be employed completed the program, whether the school gave the student any help in finding the job, whether the job was related to the student's previous training, and whether the former student found to be holding a part-time job had attempted unsuccessfully to obtain full-time employment.

2. Marketing Inflated Program Claims. The basic rule here is to keep it simple. For example, the favorite litany of advocates of the Federal program has generally gone something like this: "Last year, 17 million people acquired job skills with Federal assistance." As an extension of this rule, it is good practice to use simple, direct terms in describing the key statistics, while burying unconventional or even contradictory definitions of those terms in fine print. Two examples from the BOAE lexicon1/ should suffice here:

- o "Unduplicated student totals" meant totals duplicating individual students as many times as they took Voc Ed courses in a 12-month period, but not duplicating enrollments in individual courses.

- o Secondary level program-completer meant someone who might or might not have completed high school but who either completed the program or dropped out of the program and got a job which made the program want to claim them as a successful placement.

Clearly, as in other fields of marketing, it pays to be bold.

3. Protecting Inflated Numbers from Embarrassment. Thoughtful review and comparison with independent sources are the two great dangers to guard against. Accordingly, one strategy is to drown your potential critics in a sea of uniquely defined program statistics. BOAE and VEDS both published about 5,000 numbers a year, and these publications stressed the unique character of the federally-assisted universe in vocational education. (Unfortunately for the defenders of these systems, the numbers were sometimes so inflated that they exceeded the universe bounds of entire sectors of public education.) A second strategy, which VEDS approximated at the Federal level, is to establish a monopoly in the field by creating an integrated system of program statistics designed to meet everybody's needs. Short of achieving a complete monopoly in the field, however, other measures may be required, such as the deliberate suppression of competing estimates, or short of that, handling sources which reveal the inflated character of your program statistics with extreme delicacy. Two examples from the publication history of the National Center for Education Statistics should suffice to illustrate what is sometimes involved in protecting official program statistics:

- o The unadvertised critical total. Earlier, I mentioned that while a BOAE report was claiming nearly 4 million public secondary students in occupational programs, an NCES survey for the same period showed there were just 1.7 million such students. Here is how the NCES report treated this potentially critical finding: totals were omitted from the U.S. summary table (to get the 1.7 million figure, readers had to add up 42 components) and in the text, the suppressed total was expressed as a percent of all public secondary students. No mention was made of the fact that BOAE had published a comparable figure two years earlier amounting to more than twice the proportion found by the NCES survey.2/

- o Failure to compare VEDS with estimates from national longitudinal studies. For two years, NCES made no use of base year (1980) data on sophomores and seniors in high school to assess the reason-

3. Protecting Inflating Numbers from Embarrassment (Continued)

> ableness of the secondary-level VEDS enrollment reports. While publishing figures on the proportions of high school seniors who reported having pursued a vocational curriculum, NCES has never provided direct universe estimates of the numbers of such students.3/

Every good manual or handbook concludes with some advise on what to do when all else fails. At the risk of sounding cynical, I will follow that practice. When your inflated program statistics become impossible to market or protect from criticism, the only thing to do is change the name of the statistical system and start over. The sad fact is that in retrospect, this appears to be what VEDS represented--a fresh start for the same old game of inflated program statistics.

Ethnography: Understanding the Myths That Program Statistics Seek to Sustain

Korzybski, the semanticist, is famous for his dictum that the map is not the territory. To prepare yourself to understand the myths which engender program statistics of the type we have been considering, this dictum must be turned on its head. The map is the territory, because program statistics offer a means of acting out control over the territory they purport to describe.

Our handbook approach errs too much in the direction of cynicism and scorn toward those who preside over program statistics. Now it is time to try to develop a more sympathetic view. Suppose the government officials who are called upon to produce these program statistics are merely trying to obey the law, but the law itself is based on certain assumptions seriously at variance with reality--on myths, if you will. Then the price of obedience is participating in those myths; anything less is arguing with Congress or failing to give them what they want.

Given a close reading of the Vocational Education Act, one can identify a good many legislative prescriptions involving assumptions of doubtful validity, and many of those assumptions had a substantial impact on the design and operation of VEDS. Here I will focus on two of the most general myths embedded in the Vocational Education Act--myths widely exhibited in Federal legislation.

1. The Myth of Total Control. Systems involving unrealistic demands sometimes enjoy a long life, thanks to an unstated agreement between imposers of the system and those imposed upon: those who are governed by the system pretend its rules are reasonable, and in return, those in charge pretend that the rules are being followed. There was a good deal of this in the BOAE system and in VEDS. When called upon to count the uncountable, State and local officials duly submitted numbers to Washington which were then aggregated and published down to the last digit. Year after year, computer-arrayed numbers marched across the pages of program reports, seeming to say, "Everything is known; everything is under control."

2. The Myth of Pervasive Program Effects. Since vocational training is merely one variety of public education, and the Federal contribution is a relatively modest 10 percent, one might expect that the program would pursue narrowly circumscribed goals for maximum effect. Unfortunately, the illusion of total control encourages the belief that the program should be good for practically any purpose. What results is a program with so many special "priorities" that rational

2. The Myth of Pervasive Program Effects (Continued)

choices are impossible to make. Thus, the official statistics for such a program must seek to capture any and all program impacts, however remote or ephemeral, and to classify those impacts in a way that answers to every purpose. If participation in Voc Ed programs is relevant for manpower planning, we may want to distinguish 116 varieties of target occupations, but if Voc Ed is also good for sex equity and the civil rights of five racial or ethnic groups, we will want enrollments broken out by 1,160 categories, and this number can easily be multiplied again if we consider economic or educational disadvantagement, the special needs of language-minorities, or service to students with one of eight handicapping conditions. Proceeding in this fashion, VEDS arrived at a reporting matrix amounting to about 10,000 cells of data.

Perhaps the most bizarre reporting requirements in VEDS were those relating to followups of secondary-level program-completers. In the name of effective manpower planning, it was judged necessary to classify employed completers by 116 varieties of previous training and 26 types of current job--a 3,016 cell matrix, but on average, the 17,000 public secondary schools providing this information had only about 10 such cases to report each year. Given what we know about the brief duration of some of these programs, the limited detail provided by school records, low response rates in student followup surveys, and the frequency of job changes in the first year out of high school, this VEDS requirement was analogous to trying to measure whisps of smoke with a micrometer. Nevertheless, the resulting data, aggregated

2. The Myth of Pervasive Program Effects (Continued)

to State and national levels, helped to sustain the official myth that Federal support for secondary vocational education was having precisely measured impacts on the supply of relevant skills in the work force.

Sermon: Some Recommendations for Reform

On a cynical reading of the history of the last ten years in vocational education statistics, one might predict that still another system will be fielded to repeat the same mistakes under a new name. I am more hopeful, if only because I believe there is a better understanding in official circles of the motives and methods which gave us the BOAE system and VEDS. Accordingly, I conclude with four recommendations for reform.

1. Do not confuse official numbers with information. I believe the territorial imperatives which official program statistics are designed to satisfy are too strong to be denied, but there is no reason why we should give compliance systems a monopoly of resources or confuse the results of those systems with genuine information. Independent surveys, undertaken by organizations without any invested interest in the program or its official claims, are essential.
2. Combat the tunnel-vision of categorical programs. Even official statistics should be capable of showing how the program's piece of the action in education relates to whole students and whole schools. Clear purposes are discriminating purposes. Accordingly, programs also need to look at who they are not serving. Too often in the past, subtracting the program's officially estimated service population from the total has left a negative number.

3. End the conspiracy of polite silence about bad numbers. The point here is that too many good researchers in education thread their way through the minefields of official statistics without marking their path for others to follow. For ten years, the National Center for Education Statistics disseminated the BOAE and VEDS numbers as if they were literal truths, and yet that agency can fairly claim that its reputation for disseminating high quality data is unsullied in the literature. In the words of Sir Thomas More, silence is consent.

4. Urge more restraint on our legislators. Legislators quite properly demand accountability for program funds, but too often in prescribing reporting requirements, they brush aside considerations of mere feasibility. State and local officials should not be forced to choose between defying the law and lying with numbers to perpetuate official myths.

Notes

1. See in this connection reporting forms 346-3 and 346-4, reproduced in Vocational and Technical Education: Selected Statistical Tables, Bureau of Occupational and Adult Education, Washington, D.C., 1978.

2. See Table 19 (page 329) and text discussion of occupational programs (page 21) in Course Offerings, Enrollments, and Curriculum Practices in Public Secondary Schools, 1972-1973, National Center for Education Statistics, 1976.

3. See, for example, Chapter 3 of the 1983 Condition of Education, where estimates of proportions are presented from High School and Beyond, along side of inflated student counts from VEDS.